* Mandatory Project Narrative File Filename: | 1234-CMC EPA EE grant proposal_FINAL.pdf

Add Mandatory Project Narrative File

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To add more Project Narrative File attachments, please use the attachment buttons below.

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Delete Optional Project Narrative File

View Optional Project Narrative File

OMB Number: 4040-0004 Expiration Date: 10/31/2019

Application for Federal Assistance SF-424														
* 1. Type of Submission Preapplication Application	application				* If Revision, select appropriate letter(s): * Other (Specify):									
Changed/Corre	ected Application	Re	evision											
* 3. Date Received: 04/10/2018		4. Appli	icant Identifier:											
5a. Federal Entity Ide	ntifier:			5b.	. Fede	eral Award Ident	ifier:							
State Use Only:														
6. Date Received by S	State:		7. State Application	Identif	fier:									
8. APPLICANT INFO	ORMATION:													
* a. Legal Name: Co	olorado Mounta	in Col	lege											
* b. Employer/Taxpay	er Identification Nur	mber (EIN	N/TIN):	* c.	. Orga	anizational DUN	S:							
84-0567768				07	5753	32020000								
d. Address:				•										
* Street1:	802 Grand Ave	nue												
Street2:														
* City:	Glenwood Spri	ngs												
County/Parish:														
* State:					C	:O: Colorado)							
Province:														
* Country:				1	USA:	UNITED STA	ATES							
* Zip / Postal Code:	81601-3456													
e. Organizational U	nit:													
Department Name:				Div	ision l	Name:								
Leadville Campu	ıs			NR	IMS									
f. Name and contac	t information of p	erson to	be contacted on m	atters	invo	lving this appl	lication:							
Prefix: Mr.			* First Name	e:	Edwa	ard								
Middle Name: Jose	eph													
* Last Name: Chu	sid													
Suffix:														
Title: Grants Writer/Grants Coordinator														
Organizational Affiliat	Organizational Affiliation:													
Colorado Mounta	Colorado Mountain College													
* Telephone Number:	970-947-8347					Fax Number:	: 970-9	47-8324						
* Email: echusid@coloradomtn.edu														

Application for Federal Assistance SF-424
* 9. Type of Applicant 1: Select Applicant Type:
H: Public/State Controlled Institution of Higher Education
Type of Applicant 2: Select Applicant Type:
Type of Applicant 3: Select Applicant Type:
* Other (specify):
* 10. Name of Federal Agency:
Environmental Protection Agency
11. Catalog of Federal Domestic Assistance Number:
66.951
CFDA Title:
Environmental Education Grants
* 12. Funding Opportunity Number:
EPA-EE-18-08
* Title:
Environmental Education Local Grants Program for Region 8 Solicitation Notice for 2018
Zanvironimonour Zuuduston Zoour Grunds 12032um 201 Negion o Borroradion Negion 201 Zoro
13. Competition Identification Number:
Title:
14. Areas Affected by Project (Cities, Counties, States, etc.):
1235-2018_EPA_CMC_Areas_Affected.pdf Add Attachment Delete Attachment View Attachment
* 15. Descriptive Title of Applicant's Project:
Field-based science: Colorado students investigating water quality in their community
Attach supporting documents as specified in agency instructions.
Add Attachments Delete Attachments View Attachments

Application for Federal Assistance SF-424									
16. Congressional Districts Of:									
* a. Applicant CO-003 * b. Program/Project CO-003									
Attach an additional I	Attach an additional list of Program/Project Congressional Districts if needed.								
			Add Attachment	Delete Attac	hment View Attachment				
17. Proposed Proje	ect:								
* a. Start Date: 09/04/2018 * b. End Date: 12/27/2019									
18. Estimated Fund	ling (\$):								
* a. Federal		97,217.00							
* b. Applicant		35,750.00							
* c. State		0.00							
* d. Local		0.00							
* e. Other		0.00							
* f. Program Income		0.00							
* g. TOTAL		132,967.00							
* 19. Is Application	Subject to Review By	State Under Exec	cutive Order 12372 I	Process?					
a. This applicat	ion was made available	e to the State unde	er the Executive Ord	er 12372 Process	for review on				
b. Program is s	ubject to E.O. 12372 b	ut has not been se	elected by the State	for review.					
C. Program is n	ot covered by E.O. 123	372.							
* 20. Is the Applica	nt Delinquent On Any	Federal Debt? (If	"Yes," provide exp	lanation in attach	ment.)				
Yes	☑ No								
If "Yes", provide ex	planation and attach								
			Add Attachment	Delete Attac	hment View Attachment				
21. *By signing this application, I certify (1) to the statements contained in the list of certifications** and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001) ** I AGREE ** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.									
Authorized Representative:									
Prefix: Mr.		* Firs	t Name: Edward						
Middle Name: Jose	eph								
* Last Name: Chusid									
Suffix:									
* Title: Grants Writer/Grants Coordinator									
* Telephone Number	970-947-8347			Fax Number: 970	-947-8324				
* Email: echusid@	coloradomtn.edu	-							
* Signature of Author	ized Representative:	Edward J Chusid		* Date Signed:	04/10/2018				

BUDGET INFORMATION - Non-Construction Programs

OMB Number: 4040-0006 Expiration Date: 01/31/2019

SECTION A - BUDGET SUMMARY

	Grant Program Function or	Catalog of Federal Domestic Assistance	Estimated Unob	ligated Funds		New or Revised Budget	
	Activity (a)	Number (b)	Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1.				\$	\$	\$	\$
2.							
3.							
4.							
5.	Totals		\$	\$	\$	\$	\$

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SECTION B - BUDGET CATEGORIES

6. Object Class Categories				GRANT PROGRAM, F	FUN	NCTION OR ACTIVITY				Total
o. Object Glass Categories	(1))	(2))	(3))	(4	.)		(5)
		N/A		N/A						
a. Personnel	\$	31,301.00	\$	6,700.00	\$		\$		\$	38,001.00
b. Fringe Benefits		10,797.00		0.00						10,797.00
c. Travel		545.00		0.00						545.00
d. Equipment		0.00		12,000.00						12,000.00
e. Supplies		1,500.00		6,000.00						7,500.00
f. Contractual		15,000.00		9,000.00						24,000.00
g. Construction]	
h. Other		25,554.00		2,050.00]	27,604.00
i. Total Direct Charges (sum of 6a-6h)		84,697.00		35,750.00					\$	120,447.00
j. Indirect Charges		12,520.00		0.00] \$	12,520.00
k. TOTALS (sum of 6i and 6j)	\$	97,217.00	\$	35,750.00	\$		\$		\$	132,967.00
7. Program Income	\$	0.00	\$	0.00	\$		\$		\$	0.00

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	SECTION C - NON-FEDERAL RESOURCES									
(a) Grant Program			(b) Applicant		(c) State	(d) Other Sources		(e)TOTALS	
8.		\$		\$		\$		\$		
9.										
10.										
11.										
12. TOTAL (sum of lines 8-11)		\$		\$		\$		\$		
		D -	FORECASTED CASH	NE				1		
	Total for 1st Year	,	1st Quarter		2nd Quarter	_	3rd Quarter	┧┌	4th Quarter	
13. Federal	\$	\$		\$		\$_		\$_		
14. Non-Federal	\$	_				L				
15. TOTAL (sum of lines 13 and 14)	\$	\$		\$[\$]\$[
SECTION E - BUD	GET ESTIMATES OF FE	DE	RAL FUNDS NEEDED	FO	R BALANCE OF THE	PR	OJECT	1		
(a) Grant Program					FUTURE FUNDING	PEI	RIODS (YEARS)			
		1	(b)First		(c) Second	<u> </u>	(d) Third		(e) Fourth	
16.		\$		\$		\$		 \$ _		
		1		<u> </u>		<u> </u>				
17.								J L		
		1		<u> </u>		L		<u> </u>		
18.								J L		
]		<u> </u>		-		+-		
19.						L		J L		
20. TOTAL (sum of lines 16 - 19)										
	SECTION F - OTHER BUDGET INFORMATION									
21. Direct Charges:			22. Indirect (Cha	arges:					
23. Remarks:										

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Wendy Dew

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DashboardPre Award

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- Funding Opportunities
 - My Funding Opportunities
 - Create a new Competitive Funding Opportunity
 - Create a new Non-Competitive Application Package
 - Mandatory Non-Competitive
 - Discretionary Non-Competitive
- Application Processing
 - My Applications
 - Create a New Application
- Application Processing/
- Application Details

Note: Fields marked with an asterisk (*) are required.

Application Details

Colorado Mountain College

Environmental Education Local Grants Program for Region 8 Approving Region: EPA R8 | Awarding Region: EPA R8

Full Application

Workflow Task

Workflow History

Current delegate: None

General Information

Applicant Name: Colorado Mountain College Agency Name: Environmental Protection Agency

CFDA Number: 66.951 - Environmental Education Grants

Opportunity ID: EPA-EE-18-08

Opportunity Title: Environmental Education Local Grants Program for Region 8

Competition Type: Competitive Submitter Name: Edward J Chusid

GRANTS.GOV Tracking Number: GRANT12608677

More Information

Current assignee: Wendy Dew

IGMS Informat	tion Sava
IGMS IIIIOIIIIa	tion save
AAShip:	R8 - Region 8
Approving Region:	EPA R8
* Project Officer:	Select
PO Phone:	
Awarding Region:	EPA R8
Grant Coordinator:	Select
Grant Specialist:	Select
Program Code:	
Grant Number:	

Solicitation Information

Opportunity Id: EPA-EE-18-08

Opportunity Title: Environmental Education Local Grants Program for Region 8

 Opening Date:
 01/10/2018

 Closing Date:
 04/11/2018

Grants.Gov Tracking Number: GRANT12608677

Date Entered in IGMS: 04/10/2018

Submission Information

Submission: Application

Grant: Non-Construction

Date Submitted: 04/10/2018 **Time Submitted:** 12:00:00 AM

Type of Application: New

Applicant InformationSave —		
	Grants.gov	IGMS
Applicant Type:	H: Public/State Controlled Institution of Higher Education	
Applicant Name:	Colorado Mountain College	
Applicant DUNS#:	075753202	075753202
Organizational Unit:	Leadville Campus	
Sub Org Unit:	NRMI	
EIN:	84-0567768	
Address:		
City:		
State:		CO
Zip:		
County:		
POC Name:		
POC Phone:		
POC E-Mail:		
POC FAX#:		

Project Information Save					
		Grants.gov		IG	MS
Federal Agency:					
CFDA:	66.951 - E	Environmental Education Grants	66.931 - Internationa 66.940 - Environmen 66.950 - Environmen 66.951 - Environmen	tal Policy and State I tal Education & Trair	ing Program
	Field-base their com	ed science: Colorado students investigating water quality in nunity			
Project Period Start:	09/04/201	8	09/04/2018		
Project Period End:	12/27/201	9	12/27/2019		
Budget Period Start:					
Budget Period End:					
State(s) Affected By Project:				Add Clear	
County/Counties Affected By Project:				Add Clear	
City/Cities Affected By Project:				Add Clear	
Zip Codes Affected By Project:				Add Clear	
Project Cong Dist Affected By Project:	CO-003			Add Clear	
Congressional Districts Save					
		Grants.gov			IGMS
Applicant Cong Dist:	CO-003				
Estimated Funding					
Federal:		\$97,217.00			
Applicant:		\$35,750.00			
State:					
Local:					
Other:					
Program Income:		\$122.0C7.00			
TOTAL: Is the Application subject to review l	hy Stata	\$132,967.00			
Executive Order 12372 Process?	by State	c. Program is not covered by E.O. 12372.			
Available for Review:	,				
Is the Applicant delinquent on any F Debt?	ederal	N: No			

Authorized Representative ——		
Authorized Rep:		
Title:		
Phone:		
Date Signed:	2018-04-10	
Key Contacts		
Authorized Rep:		
Title:		Phone:
Address:		
City:		
State:		Zip:
Fax:		E-Mail:
Payee:		
Title:		Phone:
Address:		
City:		
State:		Zip:
Fax:		E-Mail:
Administrative Contact:		
Title:		Phone:
Address:		
City:		
State:		Zip:
Fax:		E-Mail:
Project Manager:		
Title:		Phone:
Address:		
City:		
State:		Zip:
Fax:		E-Mail:
Application Attachments		
Grants.gov Application: GRA	NT12608677	
Attachments:		
<u>SF42</u>	24_2_1-1235-2018_EPA_CMC_Areas_Affected.pdf	
<u>Proje</u>	ectNarrativeAttachments_1_2-Attachments-1234-CMC EPA EE §	rant proposal_FINAL.pdf
Form	n ProjectNarrativeAttachments 1 2-V1.2.pdf	

Form SF424_2_1-V2.1.pdf Form SF424A-V1.0.pdf Username wdew

Password •••••••

Submit Cancel

SF-424A Budget Information Section A - Budget Summary

Cont Burner Franking Addition	Catalog of Federal	Estimated U	Jnobligated Funds	New or F	Revised Budget	T. 4 . 1
Grant Program Function or Activity (a)	Domestic Assistance Number (b)	Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1.	66.951					
2.	66.951					
3.	66.951					
4.	66.951					
5. TOTALS						

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Section	н.	Rudget	('atem	OTIES
Section	D -	Duuget	Categ	ULIUS

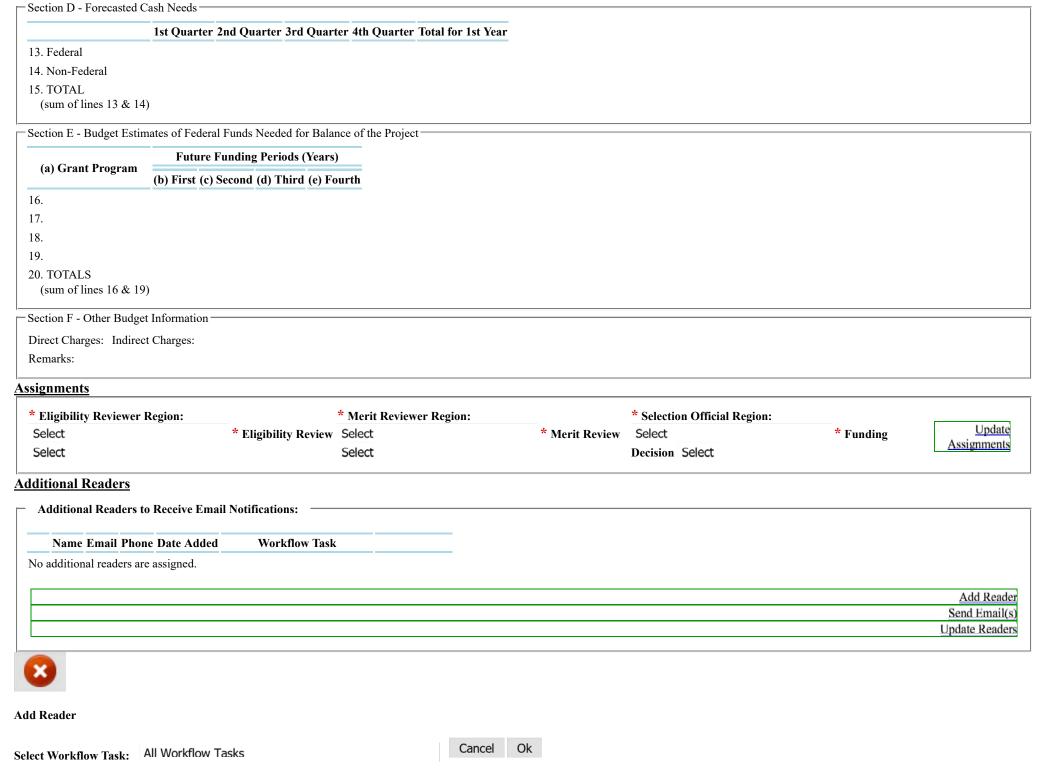
6. Object Class Categories	Grant Program, Function or Activity				
	(1) N/A	(2) N/A	(3)	(4)	Total (5)
a. Personnel	\$31,301.00	\$6,700.00			\$38,001.00
b. Fringe Benefits	\$10,797.00				\$10,797.00
c. Travel	\$545.00				\$545.00
d. Equipment		\$12,000.00			\$12,000.00
e. Supplies	\$1,500.00	\$6,000.00			\$7,500.00
f. Contractual	\$15,000.00	\$9,000.00			\$24,000.00
g. Construction					
h. Other	\$25,554.00	\$2,050.00			\$27,604.00
i. Total Direct Charges (sum of 6a - 6h)	\$84,697.00	\$35,750.00			\$120,447.00
j. Indirect Charges	\$12,520.00				\$12,520.00
k. TOTALS (sum of 6i - 6j)	\$97,217.00	\$35,750.00			\$132,967.00
. Program Income					\$0.00

Section C - Non-Federal Resources

(a) Grant Program	(b) Applicant (c) State (d) Other Sources (e) TOTALS
(a) Grant Frogram	(b) Applicant (c) State (u) Other Sources (c) TOTALS

- 8.
- 9.
- 10.
- 11.
- 12. TOTAL

(sum of lines 8 - 11)



Select Reader: Select



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2018 Environmental Education Local Grants Program for Region 8

TITLE:

Field-based science: Colorado students investigating water quality in their community.

Submitted by Colorado Mountain College Natural Resource Management Field Institute

Leadville, Colorado

11 April 2018

(3.a.i.) Project Summary.

(3.a.i.1.) Organization and Partnerships.

Colorado Mountain College (CMC) is a local college system with eleven campuses located throughout the high Rockies of Colorado. As a local college, CMC is eligible to receive this grant award. CMC's Leadville campus is home to the Natural Resource Management (NRM) Field Institute whose staff would directly manage and implement the proposed project. The NRM Field Institute's purpose is to provide CMC students with experiential learning opportunities in environmental fields that will directly complement their academic coursework. Since 1999, the Field Institute has collaborated with state and federal agencies to assist with monitoring efforts and conduct environmental remediation locally and throughout Colorado.

Project partners are critical for successful implementation of this project. We have identified three partner organizations located in Leadville who have ongoing collaborations with the Field Institute. The High Mountain Institute (HMI) is an accredited semester program for high school juniors and seniors emphasizing outdoor place-based wilderness learning. Lake County School District (LCSD) provides public K-12 education for Lake County students. Get Outdoors Leadville (GOL!) is a project of the Lake County Public Health Agency and supported through Great Outdoors Colorado connecting Lake County youth with outdoor experiences. CMC's Field Institute will collaborate closely with our partners throughout this project to maximize the impacts and student outcomes throughout our community. Full details of partner roles are described in the Letters of Commitment.

(3.a.i.2.) History of Receiving EE Grants.

CMC is not currently receiving, and has not previously received funding for this project from EPA's EE Grant Program or other funding entity.

(3.a.i.3.) Goals and Objectives.

The goal of the proposed project is to facilitate student experiences that increase public understanding around local aquatic health and water quality. We will accomplish these objectives through curricula development workshops, field-based data collection events for students, analysis, and student led presentation of their results to their community. The latter will be adaptive based on student findings and will take the form of community conferences, trailhead brochures, and interactive maps. As students undertake community projects, they will gain valuable exposure to environmental career pathways working with field professionals at the Field Institute and their project partners. All of these goals prioritize student-led efforts to further understand and take action to protect safe and clean water for Lake County residents and visitors alike.

<u>Specific:</u> (1) Educators will develop modern, data-driven curricula that addresses water quality and aquatic health of local water resources. (2) Students will collect and interpret water quality data from local waterways and communicate their findings in the community through meetings, trailhead brochures, and interactive maps. (3) Students will gain direct exposure to environmental career possibilities by doing environmental work with professionals and communicating their results.

<u>Measureable:</u> (1) Curricula outputs will address Colorado state standards for science and be implemented for ~400 students during the project and future students. (2) Over two field seasons, students will collect ~160 water samples from 20 waterways in Lake County for analysis and interpretation. Students will present their findings to the community once every semester. (3) Every semester, ~100 high school students will gain direct mentorship and career guidance from environmental professionals.

<u>Achievable:</u> The NRM Field Institute is experienced and well equipped to complete field-based environmental work. Our organization has a strong track record of completing projects of similar scope and magnitude. During the 2017-2018 academic year, the Field Institute has been working directly with the Environmental Science faculty at LCHS on a water quality pilot project involving students with hands-on fieldwork. This continues to be a successful collaboration and the proposed work builds strongly upon our current work.

<u>Realistic:</u> Since 1999, implementation of water quality monitoring projects for state and federal agencies has been a mainstay of the NRM Field Institute. All of our full time staff are trained in a breadth of sampling and analytical protocols related to water quality and aquatic health. We mentor CMC students both in their coursework and as field technicians. Additionally, CMC owns a variety of water quality sondes (Myron, YSI DSS Pro, and In Situ AquaTroll 600 data loggers), discharge measurement devices (flow trackers, ADCP, flumes, volumetrics), as well as an Optima 7000 DV ICP-OES and ion chromatograph.

<u>Time-based:</u> Given the Field Institute's history of managing large-scale water quality monitoring efforts and ability to mentor students involved in the project, the scope of the proposed effort is entirely attainable. Through collaboration with our community partners, we are confident that we can achieve the goals and objectives stated herein.

Facilitating educational activities and training for Lake County and HMI secondary students, as well as postsecondary students attending CMC, by way of a locally focused environmental education project fits squarely in the environmental education continuum presented in the RFP. Our proposed project will go beyond environmental information and outreach. Through our project, we will emphasize critical thinking and problem solving components of the environmental education continuum by having students interact with local water quality datasets that they have collected themselves. Additionally, exploring long term water quality and aquatic health datasets that are publically available, we will develop and disseminate curriculum emphasizing decision-making and action for young environmental students. Combining student data collection, analysis, and mentorship by environmental professionals to CMC, HMI, and LCHS students will cultivate a sense of personal responsibility and commitment to prioritize local efforts to ensure safe and clean waterways in their community.

(3.a.i.4.) Priorities.

Our project addresses both Educational and Environmental priorities identified in the RFP. We will directly address two Education Priorities, <u>Community Projects (Priority 2)</u> and <u>Career Development (Priority 3)</u>, through implementation of this local water quality

and aquatic health project. Environmental Priority 2, <u>ensuring clean and safe water</u>, wholly embodies this project. Specifically, we will work collaboratively to further understand and address water quality issues impacting drinking water, aquatic ecosystems, and mountain recreationalists in Lake County.

(3.a.i.5) Local Relevance.

The entirety of the project will take place in the vicinity of Leadville, Colorado within Lake County. Naturally occurring sulfide-rich mineral deposits of the Colorado Mineral Belt, and subsequent mining of these deposits for 150 years, affects water resources throughout the county. Abandoned mine workings exist throughout most drainages in the vicinity of Leadville. While there are several know areas with resultant Acid Mine Drainage (AMD; also referred to as Acid Rock Drainage when deposits are naturally occurring in situ), the water quality and aquatic heath of many streams in Lake County remain unknown. Changing demographics in Lake County and increasing usage of public lands (which make up ~75% of Lake County) by mountain recreationalists leave many people unaware of the potential health risks of AMD.

(3.a.i.6) Implementation/Delivery Method.

Our project aims to cultivate conservation stewardship through education in the form of water quality data collection, data analysis, and career development mentorship. Combining field trips, student laboratory work, and interactive data analysis workshops will be the primary implementation methods of this project.

Our project partners are already conducting outdoor place-based work with their students. Awarding sub-grants to our project partners will allow for student data collection and analysis facilitated by the Field Institute, and for more collaborative curriculum development between our organizations.

(3.a.i.7.) Audience.

Over the two-year duration of this project, we expect to reach ~400 HMI and LCSD high school students, ~75 CMC college students, their families, and backcountry recreationalists. Approximately 70% of students in Lake County School District are Hispanic according to the Colorado Department of Education. Additionally, 67% of LCSD student qualify for Free-Reduced Lunch program. Many of these families commute to adjacent Eagle and Summit counties where the cost of living is cost prohibitive. By partnering with LCHS our project will engage these students and their families in the greater Lake County community.

(3.a.i.8.) Costs.

The primary cost of implementing this project is funding for personnel to provide the human resources necessary to facilitate student mentorship and EE learning opportunities. The second major expense is five sub-grants which will promote community involvement in this project. Additionally, laboratory analyses are another significant project cost and will complete existing water quality data gaps for Lake County waterways. These data will also be the basis for developing data-driven student

exercises. Other, more minor expenses, include travel and supplies necessary to complete the project objectives. Comprehensive explanations of cost allocations are reflected in the Detailed Budget and Form 424A.

(3.a.ii.) Detailed Project Description.

(3.a.ii.1) What.

The educational activities that will occur under our project are threefold. First, we will collaborate with our partners at HMI, LCHS, and GOL! to develop more unified water quality and aquatic heath curriculum specific to Lake County. Although this curriculum is location specific, the learning outcomes are directly transferrable to other communities impacted by historic metals mining. Drawing upon long-term publicly available water quality datasets from the California Gulch Superfund Site and BLM remediation efforts in the Sugarloaf Mining District, we will develop interactive data driven exercises that will be transferable as remediation case studies for students elsewhere learning about water quality and aquatic health.

Second, the Field Institute will lead a collaborative Lake County water quality data collection effort. Data include field parameters (pH, conductivity, temperature, dissolved oxygen, etc.), heavy metals concentration, and giardia and cryptosporidium concentrations. Field Institute staff and students will provide trainings and lead field trips for students. HMI staff and students will sample Lake County waterways while conducting multiday backcountry trips as part of this data collection effort. LCHS staff and students will participate in single day sampling events. The goal of this data collection effort is for students to gain first-hand experience conducting field science while filling in significant water quality data gaps in the county.

Third, students will analyze water quality data and share their findings with others in the Leadville community by way of a community conference. Water quality results will also be shared with organizations recreating in Lake County and more widely as a resource for mountain recreationalists. Additionally, we propose facilitating student implementation of informational signage near trailheads and app-available maps that communicate key findings of the project.

Education priorities addressed in the proposal are built around water quality questions specific to Lake County and Environmental Priority 2. To successfully prioritize safe and clean waterways in our community, it is important quantify the issue beyond known problem areas. Specifically, local students are unaware of waters impacted by historic mining. By giving high school and college students the skills and agency to investigate local water quality issues, we will more effectively cultivate conservation stewardship for young people in our community.

(3.a.ii.2) Why.

Given Lake County's long history of metals mining and increasing usage of public lands by recreationalists, there is a unique opportunity increase environmental literacy surrounding water quality and aquatic health. This is true for both residents and visiting

recreationist alike. Demographics of Lake County are changing and many newcomers to our community are wholly unaware of persisting water quality issues resulting from AMD.

Clean and safe water is not the de facto level of water quality throughout Lake County (TetraTech, 2018 and Richer et al., 2017). Residents and recreationalists alike are using water with scant information about the level of water quality. Environmental Priority 2, ensuring clean and safe water, embodies this project. Through this project, it is important for students to understand the potential impacts of metals mining on water and aquatic ecosystems and to take ownership of being a part of the solution in their community.

(3.a.ii.3) How.

Educational Priorities, goals, and objectives will be reached by spending time with students and teachers in the classroom utilizing the developed water quality and aquatic health curriculum, and through collaboration in a field setting while collecting water quality data to be analyzed and presented in a community conference setting. The Logic Model Outputs plan for curriculum development workshops to prepare materials for use in HMI/LCHS classrooms and other schools beyond Lake County undertaking similar water quality studies. Community mapping efforts will identify backcountry water quality findings, monitoring needs, at-risk areas, prioritization of data collection efforts, and a long-term increase in stewardship and community engagement and awareness. Handson training for students will expose them to useful technical skills and career paths within hydrology, water quality, and reclamation disciplines. Students will develop the ability to communicate in a professional and technical sense about local environmental topics.

Water quality sample collection will provide hands-on learning opportunities for students, implementation of environmental assessment and data analysis, and emphasize environmental stewardship of clean and safe waterways. The culmination of students presenting their research to the community will not only empower them to pursue further education in STEM fields, but it will enhance their sense of place and protection of local watersheds. Student presentation of this material in a community conference setting will increase the collective understanding of public health risks relating to acid rock drainage in this community and serve to promote environmental stewardship actions. For example, reducing recreational activities that increase erosion near tailings piles or educating backcountry users of symptoms of heavy metals pollution. Identification of potential remedial sites will be an effective way to spearhead future remediation projects, improve access to information for recreationists, and protect human health. Pre- and post-training student surveys will be utilized as an assessment tool for gauging the success of student learning objectives.

Sub-grants will be used to support the engagement of the HMI and LCHS science programs and reduce the burden on those organizations in achieving the outlined Outcomes and Objectives. Sub-grantees at HMI, LCHS, and GOL! have been selected based on their commitment to participate in the proposed project and direct involvement with the education of high school students. Sub-grantees will support the educational priorities of the EPA through water quality data collection and community engagement. In-turn, each sub-grantee will satisfy environmental priorities of the EPA by analyzing and

reporting the water quality data in a format suitable to educate and inform the public about any identified public health hazards in addition to general community education targeting acid rock drainage and resulting water quality implications. Sub-grantees will be directly involved in curriculum development meeting Colorado science standards for high school and college students. Sub-grantees will also participate in a community conference to increase environmental literacy and raise public awareness about the benefits of promoting environmental stewardship in mining affected areas. In addition to the three sub-grantees noted above, the Field Institute will seek applications to fund two additional sub-grants. The Field Institute is committed to selecting two additional entities who will enhance the implementation of our project's Education and Environmental Priorities. The Field Institute will be working collaboratively throughout this project to monitor subgrantee's activities, materials, and delivery methods. To ensure these expectations are formally met, we will establish contractual agreements between CMC and the subgrantees to achieve the project's expected outputs and outcomes.

(3.a.ii.4) Who.

The target audience of our project is primarily high school junior and senior environmental science students at LCHS and HMI, as well as college freshmen and sophomores enrolled in the NRM program at CMC Leadville. A secondary, but equally important audience, are families of these students in the greater Leadville community and mountain recreationalists who use waterways in Lake County. Over the two-year duration of this project, we expect to reach ~400 HMI and LCSD high school students, ~75 CMC college students, their families, and backcountry recreationalists. By working with educational institutions and education-based community organizations, we have a framework to engage new student cohort for this project on an ongoing basis.

Lake County represents rural Colorado with only one municipality and a population of ~7600 people. Compared to surrounding communities, Lake County has a higher poverty rate and significantly lower median household income. Approximately 70% of students in Lake County School District are Hispanic according to the Colorado Department of Education. Additionally, 67% of LCSD student qualify for Free-Reduced Lunch program. Many of these families commute to adjacent Eagle and Summit counties where the cost of living is cost prohibitive. By partnering with LCHS our project will engage these students and their families in the greater Lake County community.

(3.a.iii) Project Evaluation.

Many of the outputs in this proposal are sequential, which is helpful for tracking progress. For example, first we must meet with local educators to develop age-appropriate lesson plans about water quality before we can implement those lessons. Additionally, structure of the academic year will help keep our educational outputs on schedule. Environmental data collection outputs are linked directly to the participation of students who work with our sub-grantees. We will quantify the number of students, educators, and community members who participate in the project.

Most long-term outcomes will not be measureable within the grant period, but several of the medium-term outcomes will be quantified. By surveying student knowledge

prior to participation in water quality curriculum and hands-on data collection, we will be able to identify knowledge gaps. Post-participation student surveys will assess improvements in environmental literacy over the course of the grant. Additionally, community mapping activities will identify areas in need of additional water quality data collection, and we will be able to fill in those data gaps during the course of the grant.

The grants office of Colorado Mountain College tracks the progress and deliverables of grant-funded projects on a quarterly basis to ensure benchmarks are met. Staying on schedule is imperative due to the academic calendar and the environmental constraints of the proposed data collection. Grant funds must be distributed to subgrantees in a timely manner in order to achieve the project goals, and our CMC internal procedures help ensure we stay on schedule.

Citations

Tetra Tech. 2018. Revised environmental monitoring program for California Gulch Superfund Site Operable Unit 12. Prepared for the Colorado Department of Public Health and Environment and the U.S. Environmental Protection Agency.

Richer, E.E., E.A. Gates, A.T. Herdrich, and M.C. Kondratieff. 2017. Upper Arkansas River habitat restoration project: 2013-2015 monitoring report. Colorado Parks and Wildlife Technical Publication 49.

(3.b). Detailed Budget Table and Narrative.

	EPA Funds	EPA Funds Description	Matching Funds	Match Description
Personnel/Salaries	\$31,301	8% of 3 full-time positions (\$72421+\$65725+\$51483) per year for 2 years, and 2 hrs per month admin time at \$20/hr	\$6,700	\$3,500 for 350 student-hours at \$10/hr encompassing multiple data collection events with high school students, and \$3,200 in 160 teacher-hours at a rate of \$20/hr on data collection events and curriculum development workshops.
Fringe Benefits	\$10,797	8% of CMC health insurange benefits for 3 full-time positions for 2 yrs (8% of \$23,608 + \$23,181 + \$20,691 per year)	\$0	NA
Travel		1000 miles @ \$0.545/mile over the 2-year project for travel to/from sampling sites with school groups and to deliver water samples to labs.	\$0	NA
Equipment (>\$5k)		CMC already own a variety of water qulaity multi-meters for classes and for contracted projects. We do not anticipate purchasing additional equipment for this project.	\$12,000	CMC will provide the equipment needed to collect water quality field parameters as inkind. This isnlcudes multiple YSI and Myron multi-meters (\$7,000 for use of water quality mult-meters in the field). To access some sites and to transport water samples, CMC will provide the use of a Polaris ORV (\$5000 of in-kind for 10 trips at \$500/day).
Supplies	\$1,500	100 water sample kits @\$15 each for heavy metal testing	\$6,000	60 * \$100 per 10 liter sample container for Cryptosporidium and Giardia testing
Contract Costs		\$15,000 for processing 100 water quality samples at a certified lab, testing for heavy metals	\$9,000	\$9,000 for processing 60 water quality samples at a certified lab, testing for Cryptosporidium and Giardia
Other Costs (including Sub Grar		\$24,304 as 5 subgrants to support the involvement of the local school district and local non-profits. \$500 for expidited sample shipping (\$50*10 shipments), \$500 for participation in a local watershed conference (registration fees for students and staff), and \$250 in printing fees for interpretive brochures.	\$2.050	Student-led community event at CMC gym (Gym rental each year = 2 * \$500 = \$1000), CMC room rental for meetings and workshops (\$200/day * 4 days = \$800), map printing (\$25 per map/poster * 10 = \$250)
Indirect Costs		40% salaries per CMC Federal Indirect Rate Agreement	· · ·	NA

	EPA Funds	Subgrants (\$24,304)		Match Funds
Subtotals	\$97,217		25%	\$35,750

TOTAL PROJECT COST	\$132,967.00
Match %	27%

(3.c) Appendices.

(3.c.i). Timeline. December: Final Project Year 1: 2019 May: **Evaluation** May: **Project Start** Student Data December: Student Data Collection Year 1 Project Collection October: **Evaluation** October: March: March: Student Data Student Data Curriculum Year 2: 2020 Curriculum Collection Collection Workshop Workshop August: August: **Student Training Student Training Project** November: **End** November: Student Student **Presentations** April: April: Presentations & **Student Trainings** Student Trainings Community Map July: July: February: **HMI Summer HMI Summer** February: Year 2 – Update **Data Collection Data Collection Community Mapping Community Mapping** Workshop **COLORADO** 10 **MOUNTAIN COLLEGE**

(3.c.ii). Logic Model

(0.c.ii). Logic inouci	Outcomes			
Outputs	Short-term	Medium-term	Long-term	
Pre and post training student surveys	Evaluate student knowledge	Identify trends in knowledge gaps	Improve environmental literacy by addressing local student educational needs	
Curriculum Development Workshop	Increase skills and resources by working collaboratively with local teachers	Increase ability of students to think critically about local environmental issues through updated lessons	Improved environmental literacy and understanding of local environmental issues among students and educators	
Mapping – backcountry water quality	Identification of areas in need of water quality monitoring, and areas at risk for acid rock / acid mine drainage	Prioritize data collection efforts	Increased stewardship and community engagement in environmental health issues	
Hands-on training for students, incorporating newly developed curriculum	Increased access to environmental education resources and technical skills for students	Increased ability to communicate with others about local environmental topics	Improved environmental literacy and understanding of local environmental issues among students and the community	
Water quality sample collection	Hands-on learning opportunities for students and educators in outdoor field settings	Involvement in environmental assessment and data analysis to inform decision-making	Increase environmental stewardship and community engagement in environmental land-management decisions	
Student presentations / open houses	Empowerment of students to become ambassadors for local environmental and public health issues	Increased ability to communicate with others on local environmental topics	Improved environmental literacy and understanding of local environmental issues among students and the community	
Creation of update community map with results from student-collected data	Increased understanding of the potential public health risks associated with acid rock drainage	Students, educators, and community start prioritizing environmental conservation efforts based on increased understanding of the local water quality issues	Reductions in public health risks due to increased protection of the environment improved understanding of public health risks	
Identify potential remediation sites	Improved access to information about local public health risks due to acid rock drainage	Ability of hikers and backcountry users to make decisions that reduce public health risks	Reduced public exposure to acid rock drainage, leading to improved human health	
Project evaluation	Identify the number of students, educators, and community members who participated, and expand participation through subgrant program	Demonstrate improved environmental literacy through pre/post surveys of students who participate in new curriculum and hands-on data collection	Program participates are more engaged in local environmental decision-making	

(3.c.iii). Programmatic Capability and Past Performance

Program Capabilities

The NRM Field Institute is dedicated to student career skills advancement and learning objectives facilitated through project field work in a variety of Natural Resources disciplines. Given the campus location in Leadville, CO, an area heavily impacted by historic mining practices, projects often relate to contaminated surface and ground water, acid mine drainage/acid rock drainage, erosion mitigation, and monitoring the health impacted fisheries. The Field Institute is a fully operational organization capable of monitoring and sampling for a range of water quality parameters. Specific equipment used and maintained include: YSI ProDSS multiparameter sondes (pH, conductivity, temperature, and dissolved oxygen), Myron Ultrameters (pH, temperature, conductivity), volumetric containers for measuring discharge, SonTek FlowTracker (acoustic Doppler velocimeter (ADV) measurements), and Teledyne RDI RiverPro acoustic Doppler current profiler (ADCP).

Staff and student field technicians regularly monitor local surface and ground water sites for field parameters and collect samples for laboratory analysis including total and dissolved metals. Filtration and alkalinity titrations of samples are performed following standard protocols to meet accepted scientific methodologies.

Past Performance

Although the NRM Field Institute is part of Colorado Mountain College's Leadville campus, it operates independently and is funded through grants and contracted projects. Current and past projects include:

EPA/ Colorado Department of Public Health and Environment (1999-present)

- California Gulch Superfund water quality sampling and measurements
- Section 319 nonpoint source grant sediment mitigation in the Sugarloaf Mining District

USFS, White River National Forest-

Fen delineation and mapping

Colorado Parks and Wildlife (CPW)

- Fish population and habitat monitoring
- Water quality sampling for dissolved/total metals, cations, basic water chemistry

BLM

- Upper Arkansas River and Lake Fork water quality monitoring
- Mapping, photo monitoring, and site characterization

Rocky Mountain Fen Research Project (RMFRP)

- Monitoring the success of a fen relocation/transplant
- Vegetation monitoring and piezometer monitoring

Arrowhead Waters/Nestle North America

• Grazing Management planning, wetland vegetation monitoring, fish hatchery restoration to riparian ecosystem

SourceWater Consulting, LLC

Stray Horse Gulch surface water and retention pond monitoring

Roaring Fork Conservancy

• Characterization of *Didymosphenia geminata* (didymo) on the Lower Frying Pan River

Staff Expertise and Qualifications

The NRM Field Institute Director holds a B.S. in Wildlife Biology, M.S. in Land Resources, and a Ph.D. in Ecology, where she studied the impacts of natural gas development on a bat community in northwestern Colorado. She has also served as an Environmental Education Instructor in the US Peace Corps, a Restoration and Education Technician with the National Park Service, a Preserve Steward for The Nature Conservancy, a Conservation Biology Research Technician at Lewis & Clark College, and as an Acoustics Research Associate at Colorado State University.

The NRM Project Manager earned a B.A. and M.S. in Geology from Colorado College and Western Washington University. His specialty relates primarily to sedimentary geology, stratigraphy, and isotope geochemistry. His graduate research focused on fluvial processes during the Paleocene–Eocene transition and the provenance of sediment deposited in Laramide basins. He also worked as an environmental educator for the Catamount Institute and continuously works to promote environmental stewardship through place-based education.

The NRM Assistant Project Manager holds a B.S. in Rangeland/Restoration Ecology and is near completion of a M.S. of Forestry/Wildland Fire Science studying the quantification of *Quercus gambelii* (Gambel oak) fuels on the Front Range of Colorado. She has studied invasive species spread and mitigation controls of cheatgrass in Southern Wyoming, post-fire and fuels mitigation restoration and revegetation studies in Eastern Utah with the BLM, and remote, high-alpine water quality sampling in the Central Rockies of Colorado for a non-profit agency in cooperative agreement with the U.S. Forest Service.

The Program Director will be the lead on coordinating with project partners for the proposed work. The Project Manager and Assistant Project Manager will facilitate on-the-ground operations and provide technical expertise while mentoring students in the field. The previously mentioned projects all require quarterly or annual deadlines and deliverables that the NRM Field Institute continues to achieve in timely fashion. Additionally, fluid staff roles at CMC create a system of accountability relating to project implementation and completion.

Assistance Agreements

The Field Institute currently has three federal assistance agreements that are ongoing. Two of these are with the BLM (L15AC00235 and L12AC20458), and one with the White River National Forest (USFS) (14-PA-11021500-009). All of these projects are currently being successfully implemented. Full time staff in the Field Institute manage these projects working closely with partners at the BLM and USFS. The scope of these projects is multi-year with technical deliverables specified by each agency. The Upper Arkansas River BLM project targets small scale local sites impacted by mining and recreation activities. For example, during 2017 we conducted a water quality assessment of Birdseye Gulch to examine potential negative impacts to Boreal toad habitat. The BLM Lake Fork project is a long-term water quality monitoring effort in the Sugarloaf Mining District near Leadville, CO. The Field Institute collects, analyzes, and reports semiannually about the water quality in this area. The Field Institute has been collaborating with the USFS for over a decade. Our current agreement focuses on characterizing high-elevation wetlands, specifically fens, within the White River National Forest. The BLM requires quarterly reporting and the USFS agreement has multiple technical reports that are due annually.

(3.c.iv). Partnership Letters of Commitment



Lake County School District R-1

Superintendent DR. WENDY WYMAN

Administrative Assistant BUNNY TAYLOR

Dear EPA Environmental Education Grant Committee -

Lake County High School (LCHS) is pleased and excited to join forces with the Colorado Mountain College Natural Resource Management Department (CMC-NRM) as a way to enhance hands-on environmental learning opportunities for students, and improve community understanding of local environmental issues. We support the EPA Environmental Education Grant proposal that CMC is submitting, and see this as a way to further develop Environmental Education resources for LCHS students, and for the community.

During the 2017/2018 academic year, I worked directly with Dr. Katy Warner from the CMC to develop and implement a collaborative pilot project for the LCHS Environmental Science classes. As a result, students successfully completed two rounds of "water quality week" with CMC. Each weeklong water quality investigation saw our students actively engaging in hands-on, minds-on water sampling and testing. In our first rotation students investigated a remediated mine site, and identified the existence of a fresh water spring that is helping improve water quality at the site. Students were thrilled to realize they had the ability to do real science that matters to our community. Our second rotation of water week focused on watershed modeling. Students used computer programs to delineate watersheds, interacted with a hands-on tabletop stream model, and used an augmented reality topographic sandbox to deepen their understanding of watersheds. The second rotation was exciting and memorable for students as they collaborated with one another, experienced new technology, and improved visualization of their local watershed.

This collaboration with the CMC has significantly improved higher level learning outcomes of critical thinking through scientific investigation. Additional support for this project came from the Get Outdoors Leadville! Community Learning Director, Becca Katz. A significant and helpful part of our collaboration has been the development of educator resources for better science education. By improving our professional and collegial contacts with water quality scientists and community health/recreation initiatives, teachers can expand and hone their craft of engaging students. EPA EE grant funding would strengthen our students' opportunities for reaching higher education and career goals, as well as deepening our collaborative efforts.

Students enthusiastically endorse our continued collaboration with our CMC and GOL! partners. As a result of our pilot project this academic year, many students have now expressed interest in pursuing careers in environmental science. For many of our students, believing these careers are a life option for them is significant and beneficial for our school, our community, and our nation. For this teacher, our collaborative efforts have been professionally and personally enriching, empowering, and downright fun!

Sincerely,

Milalle Cavanaugh

Science teacher

Lake County High School



April 9, 2018

Dear Grant Selection Committee,

I represent the High Mountain Institute (HMI) in Leadville, Colorado. HMI's primary program is a single-semester accredited school for high school juniors and seniors, in the heart of the Colorado Rockies. HMI is akin to a college study abroad program, but for high school students. Our students return to their home schools invigorated about education, experienced in leadership, and more aware of the world around them. Students who attend the HMI Semester complete a full course-load of honors and AP-level classes in order to reintegrate smoothly into their home academic environments. They live on campus surrounded by curious and ambitious peers in sustainable, off-the-grid cabins. Unique to HMI, students spend a full third of their semester skiing and backpacking through the mountains of Colorado and the canyons of Utah with their teachers and classmates. In their remaining years of high school and beyond, our alumni continue to consider their semester away at HMI one of the most important and formative periods of their lives.

HMI supports the CMC grant proposal because we feel the project closely aligns with our science curriculum, wilderness program and risk management agenda. The CMC project would tie in perfectly with the HMI's academic goals of engaging students with hands-on science and pushing students' critical thinking about the health and environmental impacts of water quality. This could also be an excellent opportunity for HMI teachers and other science educators in the county to create unified water quality and aquatic heath teaching resources.

Additionally, HMI is uniquely positioned to collect water samples from remote locations as part of our backcountry science curriculum. HMI expeditions visit many hard-to-reach corners of Lake County that were once mined and we currently have little idea about the metals levels in the water and the possible risk management implications. If this grant is awarded, HMI would use it as leverage to raise money to fund additional biological testing to determine the amount of giardia and cryptosporidium in our local water sources. Thank you for your consideration, HMI sees this project as a great opportunity for the students and teachers of Lake County.

Sincerely,

Justin Talbot

Director of Wilderness Programs and Risk Management

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Dear EPA Environmental Education Grant Committee -

Get Outdoors Leadville! (GOL!) enthusiastically supports Colorado Mountain College's (CMC) Natural Resources Management Field Institute's proposal for the EPA Environmental Education Grant. GOL!'s mission is to "connect all Lake County youth and families to the outdoors to inspire dreams, foster stewardship, build leadership, and strengthen community." We are excited that the EPA EE Grant will accelerate our achievement of our mission by developing greater awareness about and commitment to the natural world among our local youth and exposing them to career opportunities in environmental science. As a community-wide, collaborative initiative, GOL! can support this grant by facilitating opportunities for students to share their findings with local and regional recreationalists.

The partnership between GOL!, Lake County School District (LCSD), and CMC is already off to a great start. We have worked together to develop authentic, hands-on environmental science experiences for LCSD students. So far, our collaboration has resulted in CMC providing a week of instruction in field science techniques—from sampling to analysis—and a ½-day water quality sampling experience during Environmental Science class in both fall and spring semesters. These two weeks of instruction directly connected students to a summer job opportunity working as field scientists alongside CMC students and environmental science professionals, thereby supporting GOL!'s desire to connect youth with meaningful outdoor career opportunities. The EPA EE Grant will support a continuation and enhancement of this type of integrated work, enriching education at LCSD and helping GOL! accomplish our goals to inspire dreams and foster stewardship among Lake County youth.

While we are compelled by the ways the EPA EE grant can help GOL! achieve our mission, we are also excited to truly partner on this grant by helping facilitate connections to local and regional recreationalists. GOL! is an initiative born out of a collaborative, coalition-based process. As such, we have about two dozen partner agencies—including CMC and LCSD—helping us work toward our mission. Ensuring that our partner programming agencies, their participants, and our program participants are well-informed about their environment, including potential hazards, is key to our programming. We are excited to be a communication conduit by helping students find venues to share their findings to build a better educated community of recreationalists.

GOL! sees so many ways that CMC's receipt of the EPA EE grant will support our work with LCSD. We are enthusiastic about our local youth having opportunities to connect with the natural world through deeper scientific understanding and insights into environmental careers. We are also thrilled to support greater environmental awareness throughout our broader community.

Best regards,

Becca Katz

Get Outdoors Leadville! - Community Learning Director

bkatz@lakecountyschools.net

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2018 Environmental Education Local Grants Program for Region 8

TITLE: Field-based science: Colorado students investigating water quality in their community

Funding Opportunity Number: EPA-EE-18-08

<u>CFDA</u>: 66.951

<u>Submitter</u>: Colorado Mountain College

84-0567768 0757532020000

Areas Affected by Project: City of Leadville

County of Lake State of Colorado